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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,264	01/05/2001	Tetsuo Usami	OKI.202	3022

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EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/754,254

Applicant(s)

USAMI ET AL.

Examiner

Steven H. Rao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 6.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment

Applicants' amendment filed July 12, 2002 has been entered on July 27, 2002 and forwarded to the examiner on August 12, 2002.

Therefore claims 1,2 as amended by the amendment and newly added claims 8-9 and claims 3-7 as previously recited are currently pending in the application.

Priority

The submission of a certified copy of Japanese Patent Application NO. 2000-117990 filed on April 19, 2000 on July 19, 2002 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1,2 in relevant parts recite, " to form a Al_3Ti which prevents Si-recrystallization in a subsequent cooling process." .

Applicants' are attempting to claim a negative limitation that renders the claim indefinite because it is an attempt to claim the invention by excluding what the inventors did not invent (without recrystallization or prevent Si-recrystallization in a subsequent process) rather than distinctly and particularly point out what they did invent . (e.g. what does the Al_3Ti layer form in the subsequent cooling process).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (U.S. Patent No. 5,604,155 herein after Wang) previously applied for reasons set out in the last Office Action and those set out below.

Wang discloses/suggests substantially all the process steps set forth in the claims as previously stated.

The newly added limitation in independent claims 1 and 2, "depositing AL-Si-Cu film at a temperature of at least 400⁰ C to form layer of Al₃Ti, which prevents recrystallization in a subsequent cooling process ".

Assuming arguendo that applicants' overcome the above 112 indefinite rejection.

Wang in col. 4 lines 25-26 describes depositing a AL-Si-Cu film at 450⁰ C in the same environment for the same purpose and what is true for the applicants' is also true for the Wang reference.

Secondly Wang in col.3 lines 18-21 describes :

In particular, it is an object of the invention, to provide an Al-based contact formation process which is useful in sub-micron device geometries, and which prevents the formation of silicon nodule precipitates that resist etching.

Therefore teaches preventing formation of nodule (i.e conductive areas) precipitates (crystalline structures).

Therefore all the presently recited limitations of Claims 1 and 2 are taught by the applied prior art of record.

Applicants' argue that claims 3-7 are allowable because Wang does not teach/suggest the deposition of an AlTi_3 layer but rather the formation of an AlTi_3 from previously deposited layers of Al/Si/Cu and Ti is not persuasive for the following reasons.

Applicants' claims recite in relevant part , "depositing AL-Si-Cu film at a temperature of at least 400°C to form layer of Al_3Ti ".

Applicants specification page 4 lines 22-26 describing applicants' preferred embodiment states :

"In this way, if the Al film is deposited under high temperature conditions, reaction between the Al and Ti is promoted to form an Al_3Ti alloy layer 24."

Therefore when Applicants' claim as recited is read " to form a layer of Al_3Ti ". and the specification at least in the portion quoted above it is clear that both Wang and the claim describe identical steps namely, "the formation of an AlTi_3 from previously deposited layers of Al/Si/Cu and Ti."

Therefore all the presently recited limitations of Claims 3 to 7 are taught by the applied prior art of record

With respect to the newly added claims 8 and 9 , wherein the method further comprises , " after said forming said layer of Al_3Ti , patterning an AL layer. (Wang figs. 2,4 etc.).

Applicants' arguments against Wang presented in the Amendment filed August 12, 2002 have been fully considered but not deemed to be persuasive since as shown above Applicants' presently recited claims are identical/obvious to the steps described/suggested by the prior art of record. As shown above prima facie obviousness has been established without any doubt and without using hindsight. The same deposition steps of depositing Al_3Ti is shown and patterning recited in newly added claims 8-9 are also shown to be described in Wang.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

As the same reference as previously used is also used herein this forms a separate basis for making this action Final.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is (703) 3065945. The examiner can normally be reached on 8.00 to 5.00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 7463926 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 3067722.



October 20, 2002


C. H. SHANKS
Supervisory Patent Examiner
Technology Center 2000